

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Swarn S. Kalsi
Serial No. : 09/371,692
Appeal No. : 2005-0145
Filed : August 10, 1999
Title : SUPERCONDUCTING ELECTRIC MOTOR

Art Unit : 2834
Examiner : G. Perez

RECEIVED
2004 NOV 17 PM 4:12
BOARD OF PATENT APPEALS
AND INTERFERENCES

Board of Patent Appeals and Interferences
U.S. Patent and Trademark Office
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO DOCKETING REMINDER

In response to the Docketing Notice mailed on November 8, 2004, Applicant draws attention to the filing of a reply brief on March 12, 2003 and a request for oral hearing on March 12, 2003.

Enclosed, for the Board's convenience is a copy of the reply brief and the request for oral hearing, showing the certificate of mailing. Also enclosed is a copy of the postcard date stamped by the PTO.

Applicant looks forward to consideration of the arguments set forth in the reply and to an opportunity to address the Board in the oral hearing.

No additional fees are believed to be due in connection with the filing of this response. However, to the extent fees are due, or if a refund is forthcoming, please adjust our deposit account 06-1050, referencing attorney docket "05770-082001."

Respectfully submitted,

Date: November 15, 2004



Faustino A. Lichauco
Reg. No. 41,942

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906
20974507.doc

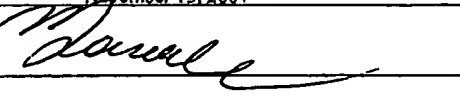
CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

November 15, 2004

Date of Deposit

Signature



Inja Zarembok

Typed or Printed Name of Person Signing Certificate

Paid Date = 03/26/2003
Account Number = 80071123
Check Number = 160253
Check Amount = \$280.00

FISH & RICHARDSON P.C.		160253	
215 Franklin Street Boston, Massachusetts 02110-1804		C	
PAY <i>1100</i> <i>11/11/03</i> <i>230570607</i> <i>170 3513 4205 08</i> DOLLARS			
TO THE ORDER OF		DATE	AMOUNT
COMMISSIONER OF PATENTS AND TRADEMARKS		<i>3/23/03</i>	<i>280.00</i>
		FISH & RICHARDSON P.C.	
52-153/112 Fleet Fleet Marine, N.A. www.fleet.com South Portland, ME		<i>15770-082001CFE</i>	

0110-0001-5
070262830 0110-0001-5
070262830 03-26-03
17010000 1ST MIX
230570607 0520-0027-8
230570607 03-26-03
FLEET
1299 002 2 20 03262003
2801183889
0560011184
FIRST VIRGINIA BANK
9322003 FALLS CHURCH, VA
01827488

NOV 25 03

0025 6474-1

PRINTED FOR THE BOARD OF PATENT APPEALS
AND INTERFERENCES
11/17/03 10:11 AM

RECEIVED
2004 NOV 17 PM 4: 12
BOARD OF PATENT APPEALS
AND INTERFERENCES

Attorney's Docket No. 05770-082001	Express Mail Label No.	Mailing Date March 12, 2003	For PTO Use Only <i>Do Not Mark in This Area</i>
Application No. 09/371,692	Filing Date August 10, 1999	Attorney/Secretary Init FRO/FAL/cfo	
Title of the Invention SUPERCONDUCTING ELECTRIC MOTOR			
Applicant Swarn S. Kalsi			
Enclosures ·Reply Brief (4 pages) ·Other: Request for Oral Hearing (1 page) A Check for \$280.00			

RECEIVED
2003 MAR 19 AM 10:34
BOARD OF PATENT APPEALS
AND INTERFERENCES

FR FISH & RICHARDSON P.C.

160253

125 Franklin Street
Boston, Massachusetts
02110-2804

C

PAY Two Hundred Eighty DOLLARS

TO THE ORDER OF

DATE

AMOUNT

COMMISSIONER OF PATENTS AND TRADEMARKS

3/12/03 \$280.-

FISH & RICHARDSON P.C.

52-153/112



Fleet Maine, N.A.
www.fleet.com
South Portland, ME

BY

16770-082001CPE

160253 011201539 80 071 123

Attorney's Docket No. 05770-082001	Express Mail Label No.	Mailing Date March 12, 2003	For PTO Use Only Do Not Mark in This Area
Application No. 09/371,692	Filing Date August 10, 1999	Attorney/Secretary Init FRO/FAL/cfo	
Title of the Invention SUPERCONDUCTING ELECTRIC MOTOR			
Applicant Swarn S. Kalsi			
Enclosures •Reply Brief (4 pages) •Other: Request for Oral Hearing (1 page) A Check for \$280.00			

RECEIVED
2004 NOV 17 PM 4:12
BOARD OF PATENT APPEALS
AND INTERFERENCES

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Swarn S. Kalsi
 Serial No. : 09/371,692
 Filed : August 10, 1999
 Title : SUPERCONDUCTING ELECTRIC MOTOR

Art Unit : 2834
 Examiner : G. Perez

RECEIVED
 2004 NOV 17 PM 4:12
 BOARD OF PATENT APPEALS
 AND INTERFERENCES

BOX AF
 Commissioner for Patents
 Washington, D.C. 20231

REPLY BRIEF

Pursuant to 37 CFR 1.193(b)(1), Applicant responds to the new points raised in the Examiner's Answer as follows.

A STACK OF DISKS IS NOT A WINDING

On page 12 of the Answer, the Examiner correctly points out that windings need not be wire. While this may be true, it does not change the fact that *Rabinowitz* teaches a rotor having a stack of three superconducting disks.¹ A stack of superconducting disks does not form a "superconducting winding" any more than a stack of pennies forms a copper winding.

On page 11 of the Answer, the Examiner suggests that although *Rabinowitz* ruled out a rotor having "wire-shaped" windings, he did not, in so doing, rule out the possibility of a rotor with other types of windings.

There are at least three difficulties with this point of view:

1. It fails to account for the *Rabinowitz* statement that "the motor/generator has only a primary set of windings"²; and

¹ See FIG. 1 and FIG. 2, *Rabinowitz*, col. 7, lines 4-7 ("Although rotor 11 can contain as little as a single layer of superconducting material, in order to increase the amount of superconducting material in the rotor, it is preferred to have several layers 12.") Applicant uses the word "stack" despite its vertical connotation since, in any event, there is no external reference frame in the figures to define which way is up.

² *Rabinowitz*, col. 5, lines 58-60 ("[b]ecause this motor/generator has only a primary set of windings, it is simpler in some ways than most motor/generators.").

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, Washington, D.C. 20231.

3/12/2003
 Date of Deposit
 Signature
 Carla F. O'Neil
 Typed or Printed Name of Person Signing/Certificate

2. It fails to explain why FIGS. 1-8 show rotors with superconducting disks, rather than rotors having "non wire-shaped" windings.³
3. It fails to account for the absence of any discussion, in what should be an enabling disclosure, of these "non wire-shaped" windings.

In Applicant's view, the cited passage⁴ is simply one in which Rabinowitz draws attention to an advantage of his motor. Rabinowitz is pointing out that because his rotor is made by placing superconducting *disks* adjacent to each other, he can use any superconducting material at all. He is no longer restricted to choosing superconducting materials that can be formed into an elongated structure (i.e. wire, foil, thin film, tape) that is later wound into a winding. He avoids this restriction by avoiding windings altogether.

Unlike the Examiner's interpretation, Applicant's proposed interpretation of this passage offers the advantage of being consistent with points 1-3 above.

It is apparent that *Rabinowitz* teaches a rotor having superconducting disks. These superconducting disks cannot reasonably be characterized, either individually or collectively, as a winding. Accordingly, *Rabinowitz* lacks any teaching or suggestion of a rotor having a superconducting winding, as recited in the pending claims.

A SQUIRREL CAGE IS NOT A WINDING

On page 15 of the Answer, The Examiner correctly points out that a magnetic field will induce loops of current on a squirrel cage. It is, of course, well known that a magnetic field will induce loops of current in any metal structure that it encounters. This does not, however, make all metal structures into "windings."

The squirrel cage is not a winding at all. It is essentially a wire mesh, topologically no different from a tin can that has had long strips cut out from one end to the other to form the bars of a cage.

³ FIG. 9 illustrates a special case in which the superconducting material is on the stator instead of the rotor. The rotor windings in this case are conventional windings, not superconducting windings.

⁴ *Rabinowitz* at col. 5, line 66 to col. 6, line 3, ("Because it is in a non-wire form, instead of one or more windings of wire, the motor/generator can be implemented with substantially any superconducting material, including those that are too brittle to be easily and/or cost effectively formed into superconducting wires.")

As the Examiner suggests on page 15, paragraph 2, in a squirrel cage, it is possible for current to flow in a closed loop. The Examiner apparently recognizes that in a squirrel cage, current can flow across one bar 4, down one end ring 5, back across another bar, and then up the other end ring to its starting point. The Examiner appears to suggest that the current loop defined by these two bars and the end rings form one turn of a "winding." Under this scheme, the squirrel cage would become a "winding" that consists of many circumferentially offset current loops, all joined together at two endpoints (i.e. the end rings).

However, a structure does not become a "winding" simply because it is possible to trace out a closed path for current flow. In virtually all electrical circuits, it is possible to identify numerous closed loops through which current can flow. However, it would stretch credulity to characterize each loop in an electric circuit as a "winding."

A "winding" refers to an elongated conductor formed into a coil having two or more "turns." The turns collectively define a core of the winding. Current flowing in the conductor generates (as does any current) a magnetic field whose field lines enclose the current. In a winding, the conductor guides current so that the field lines from current in each turn of the winding are funneled through the winding's core. As a result, the magnetic field in the core becomes quite high. This is why, for example, windings, and not a squirrel cages, are used to make electromagnets.

The use of the term "winding" for the structure shown in *Higashi* runs afoul of the Examiner's own definition of a winding.⁵ The Examiner quotes a dictionary that defines a winding as "one complete turn of something wound." In the case of the *Higashi* squirrel cage, it is unclear precisely what is being wound? Certainly, it cannot be the superconducting material. It is clear from the figures that the superconducting material 13 extends only as far as the end rings 5. Since it is plain from the figures that the superconducting material is not wound, *Higashi* cannot possibly teach a superconducting winding.

⁵ Examiner's Answer, page 15, last paragraph.

Applicant : Swarn S. Kalsi
Serial No. : 09/371,692
Filed : August 10, 1999
Page : 4

Attorney's Docket No. 05770-082001

These difficult questions are avoided by recognizing that a squirrel cage is fundamentally different from a winding, and that what *Higashi* teaches is a squirrel cage, and not a winding.

SUMMARY

For reasons set forth above and in the Appeal Brief, it is apparent that neither *Higashi* nor *Rabinowitz* teaches a rotor with a superconducting winding. As a result, the combination of *Higashi* and *Rabinowitz* also lacks a teaching or suggestion of a rotor having a superconducting winding. For these reasons, and the reasons stated in the Appeal Brief, Applicant submits that the final rejection should be reversed.

No additional fees are believed to be due in connection with the filing of this rebuttal brief. However, to the extent that a fee is due, or if a refund is forthcoming, please adjust our Deposit Account No. 06-1050, referencing attorney docket number "05770-082001."

Respectfully submitted,

Date: March 12, 2003



Faustino A. Lichauco
Reg. No. 41,942

Fish & Richardson P.C.
225 Franklin Street
Boston, Massachusetts 02110-2804
Telephone: (617) 542-5070,
Facsimile: (617) 542-8906

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Kalsi
Serial No. : 09/371,692
Filed : August 10, 1999
Title : SUPERCONDUCTING ELECTRIC MOTOR
Art Unit : 2834
Examiner : G. Perez

Commissioner for Patents
Washington, D.C. 20231

REQUEST FOR ORAL HEARING

Under the provisions of 37 CFR §1.194(b), appellant respectfully requests an oral hearing. A check for \$280 accompanies this request.

Please apply any other charges or credits to Deposit Account No. 06-1050, referencing attorney docket number "05770-082001."

Respectfully submitted,

Date: March 12, 2003



Faustino A. Lichauco
Reg. No. 41,942

Fish & Richardson P.C.
225 Franklin Street
Boston, Massachusetts 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906

20573028.doc

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, Washington, D.C. 20231.

3/12/2003
Date of Deposit

Carla F. O'Fodile
Signature

Carla F. O'Fodile
Typed or Printed Name of Person Signing Certificate